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The MONTHLY REVIEW

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American Electro Platers Society

A SOCIETY FOR THE ADVANCEMENT
OF THE
SCIENCE OF ELECTRO-PLATING

OCTOBER, 1923

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ANNUAL BANQUET

Philadelphia Branch

Saturday, November 24th, 1923

Mosebach Cafe, 13th St. and Girard Ave.

PHILADELPHIA, PA,

AFTERNOON SESSION - 3:45 p. m.
DINNER - - - - 6:15 p. m.

FOLLOWED BY DANCING

A hearty invitation to all members and ladies of the A. E. S. to enjoy a pleasant evening and to renew old acquaintances.

TICKETS $3.00 PER PLATE. THE COMMITTEE

MONTHLY REVIEW

Published by the

American Electro-Platers' Society

ONEIDA, NEW YORK

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VOL. X OCTOBER, 1923 No. 10

EDITORIAL

WILL YOU BE A PRIZE WINNER?

The Executive Board are working out details in method of awarding prizes to be given at the next annual convention.

A prize is to be given for the best paper, idea or suggestion, or, in other words, a prize for the most valuable contribution to the plating art made during the year by members of A. E. S.

And another prize is to be given for the best exhibit of plate as finished work shown at the Milwaukee Convention. Get busy, boys!

MILESTONES

By Philip Uhl, Past President A. E. S.

These annual conventions are milestones which mark the advancement of our cause, and if held for no other purpose than to renew old acquaintances and to welcome new friendships, these meetings would not be in vain, for without co-operation and friendships this Society could not have reached its present size.

Year by year the usefulness and necessity of these conventions are becoming more evident, as shown by the work of the Branches during the year. Here we get new ideas, different methods and able discussions of our problems and we go home with still greater enthusiasm and confidence.

This growing interest, as shown by the Branches in their annual sessions and banquets, is most encouraging. I had the pleasure of attending a few of these gatherings during the past year and it was a pleasure to see seventy-five to a

hundred men devoting an afternoon to the reading of papers and joining in the discussions.

Much credit is due the staff of the Bureau of Standards for their assistance in furthering the work of the Society. The Bureau has been of invaluable service to the members in solving their problems and in delivering lectures at various meetings.

I will quote here a little verse which illustrates the result of everyone working together toward a common goal:

"Help one another," the snowflakes said,
As they huddled down in their fleecy bed:
"One of us here would not be felt,
One of us here would quickly melt;
But I'll help you and you help me,
And then what a big white drift we'll be!"

I want to assure you, Mr. President and fellow delegates, of my earnest co-operation at all times and I sincerely hope that still greater success may bless our work and that the day is not far distant when every foreman plater will be a member of the A. E. S.

MORE ADHESIVE DEPOSITS

By A. F. Norgren, Sales and Service Dept., the Eager Electric Co.
(Member Detroit Branch)

The process which I am going to talk about is one which I have used since 1898.

In the course of my experience since that time I have found it of great value to me in plating on many kinds of work. I am not sure that the principle is not possible of an even wider application than those to which I have applied it successfully.

Until September, 1909, when I was appointed consulting plater for the five factories of the Remington Typewriter Company, I do not think any one else was using this process. At that time it became my duty to try to standardize the methods in all of these five plants.

A few weeks after this time the process as used in a limited way was published in "Metal Industry" by one of the men to whom I had given instructions in its use. In the article referred to, as also in a later one, he allowed it to

be inferred that the process was one which he had originated.

In one of Dr. Watts' books on plating he credits this man, Emmanuel Blasset, with this process. I have called the subject of this paper, "More Adhesive Deposits," and in cases where this process ca nbe used there is no doubt about the deposits becoming as a part of the metal upon which it is applied.

As I first used the process as a means of depositing nickel upon nickel plated work, let us first take up that phase of the subject. I have no doubt that the value of a process for nickeling on nickel will at once be apparent to every plater present. In the first place, there is likely to be times in every shop where some pieces will be "cut through" in buffing, or there may be cases where, through a change in design or by an oversight, it may be necessary to make an extra mill cut, or to rivet on an extra piece, or for any one of many reasons it may be desirable to replate a number of pieces.

Furthermore, in cases where nickel plated pieces have very sharp edges, and irregular shapes, it is sometimes well nigh impossible to plate them in such manner as to prevent them being cut through on these edges. Now, when such pieces have been once nickeled and buffed and are plated the second time, the merest touch on the buff is sufficient to bring out the high lustre.

In the case of steel or iron goods I do not believe it is possible to get as high a lustre on one-coat work as it is on two-coat work, buffing each coating, and surely because of the fact that the second coating requires so little cutting, due to the hard, bright surface upon which it has been deposited, the work is necessarily better protected.

By numerous experiments I have satisfied myself that steel work nickeled in this way is better protected against rusting, not alone, I believe, because of the deposit being thicker, but rather because of the fact that the meshes of the two coatings are so inter-twined and crossed as to render the whole coating less pourous. This, however, is only my theory.

All of the recognized authorities on plating speak of nickeling on nickel as being impossible, or at least unre-

liable, and especially if the second coating is to be of any considerable thickness, great stress is laid upon the necessity for particular care in cleaning, and even then the results are spoken of as uncertain. With the method which I am about to describe less care is required in cleaning the work for replating than is necessary with new work, and it matters not whether it be one piece or ten thousand pieces, and again it matters not whether the nickel plated parts have been buffed after plating or not. You can be more sure of the second coating adhering to the first than of the first coating adhering to the base metal. In other words, it is impossible to separate the coatings.

A Short History of How I Discovered the Process

In 1898, while working in New York city, I was called upon to renickel some pieces which had been filed, and thus left a thin exposed surface of steel. These pieces, of which one hundred were wanted in a hurry, were sent to the plating room in lots of ten pieces at a time. They were then replated, after which it was necessary to do considerable bending and fitting. While the second lot of ten pieces were being plated I was called into the assembling room and shown that those pieces which had been replated were all peeling upon being bent. I took some more of the pieces with me and returned to the plating room. In preparing this lot I took particular care to be sure that they were perfectly clean before coppering. After taking them from the copper they looked to be coppered in a perfect manner. I then examined them under a powerful microscope and found that the copper coating was full of very fine blisters. The copper solution was apparently all right, as it worked perfectly on steel or iron.

I next took one of the coppered pieces and scoured all the copper off with fine pumice stone. After again coppering this piece I found, by examining it under the microscope, that the copper deposit was perfect. I finished that lot of ten pieces in that way, that is, by cleaning, coppering, scouring off the copper and then recoppering and nickeling.

These pieces were very irregular in shape, thus making it difficult to scour off the copper in some places, so that by the time I had done ten pieces my hands and my

patience were pretty well played out. But those pieces which were subjected to this treatment could not be made to peel.

It occurred to me that possibly the result might be the same if the first coating of copper were taken off by dipping. I had a brass dip handy, so out of the next lot I took two or three pieces, cleaned and coppered them, then removed the copper by immersing them quickly into the brass dip, then recoppered and renickeled them. Well, really that is the whole story to nickeling on nickel, and since that time I have never found any trouble in nickeling on nickel, although I have since found that it makes no difference whether the work is coppered again after removing the first coating or not. It may at once be put into the nickel after removing the first coat of copper.

It may occur to some that it would do as well to remove the copper electrically. This, however, I have found does not answer, and the results are not good. I have used this process in replating hundreds of thousands of pieces of many different classes of work, such as typewriters, bicycles, plumbers' hardware, automobiles, etc., and it never fails ,and it matters not if the work before going into the copper appears to be unclean, that is, if the water breaks in places. You can be sure that after coppering and dipping off the copper and nickeling by any ordinary methods the second coating of nickel cannot be separated from the first.

Just what the cause of this is I am not prepared to say. I was at one time called upon to finish in oxidized copper some pieces which are called the platen twirler on a typewriter. The cores of these pieces were made of steel, nickel-plated and buffed, and the body of these pieces was made of a composition which would not stand hot water or any alkaline solution. I wired these pieces, struck them, without any cleaning, into an acid copper solution where they received a very poor and uneven deposit. I next dipped off this copper and returned them to the acid copper bath, where they received a good, perfectly adherent coating of copper, after which they were oxidized and relieved without any failures and while I am on the subject of oxidizing, I may as well tell you how I have found this same prin-

ciple to work on this, that is, the so-called copper oxidizing by the use of liver or sulphur or any of the substitutes.

I have found that a much more substantial and adherent black may be obtained by first allowing the copper or copper plated pieces to remain a short time in the oxidizing solution, then removing them, rinse, then agitate in a cyanide solution to remove the oxidize, then again immerse in the oxidizing solution until the desired black or dark blue color is obtained. I have found that by this method a much more adherent black is obtained than can be gotten by only one dip, and the finish will stand considerable scratch brushing, and furthermore, it is not important to be so careful with the strength of the oxidizing bath. In speaking of oxidizing you will understand I speak of it in the sense that it is commonly used by platers.

For obtaining perfectly adherent coatings of nickel upon German silver, or what are called silver metal castings, the same methods suggested for nickeling on nickel may be used, except that some modifications in the acid dip are necessary. It is necessary to have the dip in such condition that it will not too strongly attack the surface of the metal, and thus destroy the polish. This is not difficult to do, and I have found that even for coating brass it is possible to so modify the dip that the work may be coppered and dipped off without spoiling the polished surface. It may occur to some that possibly the virtue of this process lies in the dipping, and that the same result might be obtained without the preliminary coppering. I assure you that this is not the case.

Most platers will say there can be no difficulties in nickel plating on brass or on brass or bronze castings, and in a general way this is quite true, yet it depends largely on what treatment the work is likely to be subjected to. Within the last two years I plated many thousands of parts for a washing machine company. There is one particular part on their machine which is called the piston, which, when the machine is in operation, is constantly rubbing up and down in a packing. Before I applied this process to the plating of that part they were continually having trouble with the piston peeling. Since that time there have been many thousands of them plated without one ever peel-

ing, to my knowledge. I have used this process with perfect success on plumbers' hardware. On any work on which it is required to have a deposit which absolutely cannot be made to blister or peel, this process is useful.

I have found this by far the best and safest method for plating aluminum. By striking aluminum in the cyanide copper solution, and then removing the copper in a dip composed of 50 per cent. nitric acid and 50 per cent. water, a surface is provided upon which there is no difficulty to deposit a perfectly adherent coating of copper of any desired thickness, or if it is desired to nickel plate the aluminum this can be done by striking the work a second time in copper and after rinsing, running into the regular nickel solution.

While working in an automobile plant at one time I was called upon to produce what they called a satin finish upon all of the nickel parts. The finish required was not difficult to produce upon the brass parts, those being first polished and buffed. The satin finish was produced by using a very coarse scratch brush, such as is used in foundries to scratch brush castings. In order to have the finish on the iron and steel parts exactly match that on the brass, we copper plated these parts, then scratch brushed them. This, however, was quite a severe strain on the copper deposit, and we frequently had some parts blister in the scratch-brushing operation. I then tried the dipping-off method, with the result that we had no further trouble with blistering.

The steel parts, however, required somewhat different treatment, owing to the fact that, after using the dip for a time it became contaminated with copper, and a replacement action took place which partly coated the steel with a non-adherent coating of copper. To remove this we arranged a tank of cyanide solution with the reverse current, and a momentary strike in this is sufficient to remove this copper and leave the work in perfect condition for plating.

This method may be used with the assurance of a perfectly adhering deposit, either of copper or for nickeling direct on the steel. I am sorry to say that so far as I have been able to determine, this method has limitations. For instance, it will not work on high carbon steel or on cast iron,

owing to the fact that the action of the nitric acid in the dip leaves a black scum on the surface which is hard to remove.

I have had some success in substituting a cyanide of zinc solution for the copper and then dipping off in hydrochloric acid. By this method I have taken pieces made from iron, steel, brass, brittania metal and nickel plated pieces all on the same wire at the same time and nickeled them with perfect success. I went so far as to try this on a razor blade and found that it could be nickeled and afterward honed without showing any signs of peeling. I also used this method successfully on skate runners.

I realize that I have handled this subject in a somewhat jumbled manner, and my excuse for this in that I have not given enough time to writing it to get it into properly coordinated shaped.

The main point, or rather, I might say, the underlying principle of this subject is, that from my experience I have found that a surface best suited to receiving an adherent deposit can be prepared by first depositing a suitable coating of metal and then removing it by the proper means.

It has been my privilege and pleasure within the last few months to instruct and in some cases to demonstrate this process to quite a number of platers.

MODERN PLATING ROOM

By F. T. Taylor

The object of this paper is to call attention to the principles which actually govern the design of a modern plating room.

In order to get a correct picture of any plating room it is well to analyze the principal purposes for which electroplating is used. These are briefly as follows:

(1) **Ornament.** As for example, gold or silver plating.

(2) **Protection against air and corrosion,** as for example, zinc and lead plating. Another protective use of plating is protection against wear, as for example, nickel typing.

(3) **Correction of faults,** as for example, the use made during the late war of plating to build up the weight of un-

der-weight shells, which would otherwise have been scapped.

(4) **Miscellaneous uses,** such as the development of non-inflammable metallic cloths for airplane service, the production of thin copper or other metallic sheets, electro deposit work of all sorts, electroplating, notably with zinc as a metallic lubricant, electroplating with copper for case hardening processes and a number of other applications of electroplating.

From this brief statement of the principal uses of electroplating it is evident that a plating room may be required to handle light work, medium work, heavy work and a mixture of any two or all three of these classes. Very naturally a plating room may be required to turn out flat work, polished work; the metal to be plated may have to be put on to a ferrous base, non-ferrous base or a composition base, and as a further factor, a plating room may be required to plate one metal only, as for example, nickel on steel, or it may be required to plate a variety of metals, as for example, brass on steel, nickel on steel, zinc on steel and nickel on die cast work.

Without attempting to detail at further length the variety of problems which arise and have to be met in designing a successful plating room, it should be noted that all of the conditions just stated can be met if the true fundamental principle of electroplating is thoroughly understood and constantly kept in mind..

The fundamental principle of electroplating is that commercial electroplating represents a problem of continuous transportation.

Electroplating differs from many of the ordinary processes of manufacture. It is, however, similar to some. The distinguishing feature of the electroplating process is, therefore, the fact that in practically every case where work is started through the electroplating cycle it must be carried through the complete treatment, beginning with the cleaning and ending with the drying operation, without substantial interruption.

From these remarks it will be obvious that conveying equipment is the only type of equipment that really and

thoroughly satisfies the fundamental principles of commercial electroplating.

There are two general types of conveyors which can be used for electroplating processes—the full automatic type and the semi-automatic type.

The advantages of conveyors from the electroplating standpoint may be summarized as follows:

(1) Provide solution agitation.

(2) Give uniform average and brighter deposit.

(3) Lessen gassing, overcome pitting and avoid burning.

(4) Solution control made simple and accurate.

(5) Can be used with either acid or alkaline solutions.

(6) Single or multiple metal coatings may be deposited.

(7) Remove variable time element.

(8) Insure proper cleaning and proper pickling, thus eliminating blistering and peeling.

(9) Improve anode and cathode efficiency.

Conveyors make possible savings such as:

(1) Reduce cost per unit by eliminating handling.

(2) Increase the production.

(3) Eliminate stringing of work.

(4) Provide systematic "flow of work."

(5) A minimum of spoiled work.

(6) Reduce cost of final coloring operations.

(7) Save floor space, anode investment and cost of solution upkeep.

(8) Cheaper to buy and install than any other type of equipment for equivalent capacity.

(9) Lower interest and depreciation charges.

Full automatic conveyors automatically carry out the entire electroplating cycle and eliminate all handling of the work through the separate treatments of the electroplating cycle. The full automatic equipments are simple and are far easier to operate than any other type of electroplating apparatus. They create the best economies that can be made in electroplating.

Such full automatic machines consist of two parts—an overhead conveyor with transfers, and tanks. The overhead conveyor should be rugged and simple, consisting of a single high grade roller chain, by means of which the

racks or pieces themselves are carried forward through the treatment tanks at a pre-determined rate of speed.

There are several methods of lifting the work out of one tank, carrying it forward and into the next succeeding tank. The method which closely imitates the natural handling of the work by a skilled operator is unquestionably the best method and this means that the transfer of the work from one solution to the next succeeding should be done rapidly in order to prevent oxidization, which occurs if the work is exposed to the air for an appreciable length of time during the transfer. For example, it is well known that work taken from a copper plating solution should be rinsed quickly to prevent oxidization of the copper.

The complete conveyor, including the means of transfer, may be supported from the ceiling or from the floor. The moving mechanism should not be supported from the tanks for two reasons:

(1) The mechanical reason of keeping the stresses and strains of the moving parts from affecting the tanks.

(2) The electrical reason. The entire apparatus can be made free from troubles caused by so-called electrical grounds.

Full automatic conveyors therefore carry the work through the cleaning, rinsing; pickling, rinsing; striking, rinsing; plating, rinsing, and drying treatment from the loading to the unloading space in a definite and pre-determined manner. Such equipments, therefore, make it easy to control solutions and to produce uniform quality of work.

Full automatic equipments can be designed to take care of small production. Later on they can be expanded to accommodate increased production.

Semi-automatic conveyors are those which transport material through a single solution or through a portion only of the several treatments which comprise a complete electroplating cycle.

There are some applications in which semi-automatic conveyors are to be recommended, but it should be remembered that semi-automatic conveyors are limited to two principal features. They produce agitated plating and may produce a more or less accurate timing of the work

in the particular portion of the plating cycle which they control.

Granting, however, that the same amount of plating is applied regardless of the method used to apply it, the only substantial and worth-while savings in money that can be made in electroplating are those which accrue from the elimination of manual handling of work from one tank to the next succeeding in an electroplating cycle, can only be accomplished through the use of full automatic conveying apparatus, which is the best type of electroplating equipment for the modern plating room.

REPORT ON A. E. S. CONVENTION HELD IN PROVIDENCE, JULY 2-5, 1923

RECEIPTS

Total registrations, 332; paid registrations, 326	$1,956.00	
Banquet and Newport tickets	121.90	
Program	2,105.00	
Booths	750.00	
Due on program	5.00	
Due on booths	25.00	
Interest from bank	2.36	
Total receipts		$4,965.26

EXPENSES

Stationery	$ 59.25
Advertising labels	19.24
Mailing boxes	.59
Circular letters and mailing	19.10
Expenses o committee meeting in New Haven	26.16
Expenses to Boston	10.08
Mr. Crouch's commission for soliciting advs	154.00
Rubber stamps	1.99
Postage (catalogues, letters and returning cuts)	64.27
Theatre tickets	55.00
Chartering Newport boat	300.00
Expenses, two trips to Newport	11.58
Newport shore dinners	445.50
Ten-mile drive	243.00
Ed. Holyoke, patriotic address, July 4	25.00
July 4th luncheon	400.50
Providence-Biltmore concert, ladies' entertainment	42.00
Transportation to Whiting & Davis factory	36.00
Banquet	1,293.00
Tips	98.75
Programs	398.00

Badges	343.50	
Electros, Supreme Officers	9.31	
Signs	18.25	
Transportation from boat to beach and return	56,00	
Rocky Point special cars, ladies' entertainment	18.00	
Roger Williams Park special cars, ladies' entertainment	27.40	
Playing cards, ladies' entertainment	5.60	
Supreme Pres. and Sec.'s rooms; also A.E. S. room	132.50	
Electric packing at hotel	17.00	
Banquet entertainment	62.00	
Telegrams and telephone calls	22.42	
File and index guide	1.40	
Renting of lantern and screen; also operator	10.00	
Stenographer's services	29.67	
Lumber, labor, etc., for booths	90.76	
Advertisement, manufacturing jeweler	40.00	
Cigars and cigarettes, banquet	82.10	
Table decorations	25.00	
Paid to Prov.-Attleboro Br. members for incidentals	72.73	
Miscellaneous	23.61	
Total expenses		$4,790.26
Surplus		$ 175.00

DISTRIBUTION OF SURPLUS

Milwaukee Branch (convention fund)	$ 50.00	
Boston Branch	25.00	
Bridgeport Branch	25.00	
Connecticut Valley Branch	25.00	
Providence-Attleboro Branch	25.00	
Waterbury Branch	25.00	
Total distribution of surplus		$ 175.00
Total expenses		4,790.26
Grand total		$4,965.26

Pre-convention contributions are not considered in this report as moneys so contributed were returned to the different Branches.

FIRST CALL FOR THE 1924 A. E. S. CONVENTION

Three months have passed and as the embers of the 1923 Providence Convention of the A. E. S. burn out, a new organization arises out of the ashes to work out the problems for the 1924 A. E. S. Convention in Milwaukee, Wisconsin. It is the desire of the convention committees to get an early start. The general committee and most of the subcommittees have been selected, the Hotel Pfister has been

chosen as official headquarters, and the date set for June 30, July 1, 2 and 3.

The work of getting the educational papers and features has been placed in the hands of Dan Wittig and Arthur E. Kienth. From the information gathered at the Providence Convention, we have learned that the success of the convention will depend largely on the educational program and getting the finished program into the hands of the members three weeks before the opening of the convention. While the program of the Providence Convention was sent out ten days before the convention, many of the members did not get their program until after the convention.

The first call for papers and educational features will be sent to all of the branches, and our friends about November 1. The second call about January 1. This will give the branches and all those desiring to help the A. E. S. a good chance to get a start during the winter months, and when spring comes all of this work should be finished before the call of the open again lures our friends from their work.

As the convention is the big feature of the year's work of the A. E. S. ,we beg of all of our friends to have all papers and other features of the educational program in the hands of the committee by the 10th of May, 1924.

All communications in regard to the educational program should be sent to Dan Wittig, chairman, 375 Third street, Milwaukee, Wisconsin.

BRANCH NEWS

Toronto Branch

The September meeting was held on Monday evening, September 24, with an attendance which was truly remarkable. It exceeded in numbers that of any regular meeting in many months, and the boys were full of enthusiasm during the entire evening. Not a soul left the meeting until the close, which was announced at 11:10. During past two months it has been necessary to have a temporary Secretary-Treasurer on the job, and W. S. Barrows assumed the responsibility. As Mr. E. Coles is now in charge of a position out of town it became necessary to elect a permanent Secretary-Treasurer. For some reason or other (you may form your own conclusions), W. S. Barrows was prevailed upon to resign the Presidency and accept the office of Secretary-Treasurer. Mr. J. S. Cairus is now President and Mr. Colin E. Turner is Vice-President. "No sur-

render" is to be our slogan, and our charge against all difficulties and obstacles hindering progress in our work as a society will be continued with increasing determination. Every member will be a co-operator in the effort.

Mr. Frank Thiers gave a very interesting and instructive blackboard talk on "The Source of Current, Etc.," and proved himself to be a splendid speaker, not afraid to get to the very depths of his subject. Mr. Thiers will continue the talk at a future meeting.

W. S. Barrows presented a paper on "Designing Holders and Other Aids Used in Commercial Electroplating." The paper was illustrated by a small model of a "stall" used by the writer, and by several forms of holders.

Mr. Wade Hampton of the Imperial Oil Company has consented to address us at October 22 meeting on "Oil." We now have speakers engaged for all meetings to February, 1924. If anyone will oblige by making an offer to fill in any of the later dates we will be pleased to hear from them.

Waterbury Branch

Waterbury Branch, A. E. S., has been granted permission by the local Department of Education to use the Crosby High School laboratory one night a month. The members, under competent instructors, will devote their time principally in learning the art of analyzing various solutions. It is expected that this new departure will be the means of increasing interest in the branch and building up its membership. The members enjoyed an interesting talk at the last meeting by Henry Keshian, metalurgist at the Waterbury Manufacturing Company. The lecture was on the structure and composition of steel and brass, and was illustrated by stereopticon views. A committee was appointed to work in conjunction with Hartford and Bridgeport Branches in arranging for a banquet. It has been arranged to have talks and papers by the members on various subjects pertaining to the trade. After the business session was over refreshments were passed around. Visitors were present from Bridgeport and Providence Branches.

Cleveland Branch

The regular business meeting called to order at 8:15, President Ter Doest presiding, at Hotel Winton. The minutes of previous meeting read and approved, the letter from Supreme Secretary's office read, the board of managers reported on application of J. H. House, which was received and held over until next meeting; Mr. C. L. Smith gave a paper on barrel plating to be continued at the next meeting. No further business, the balance of evening was spent in a general discussion. The motion to adjourn was made at 10:45 p. m.

St. Louis Branch

On account of the first Tuesday evening in October being the time of the annual visit of "The Veiled Prophet" to our city our regular meeting was held on October 4. "Veiled Prophet" night is a parade, carnival

and also a select ball. The writer, accompanied by E. Lamoureux of Chicago, were in the parade (however, back of last float) in a trolley trying to get to town, while our Supreme First Vice-President represented us at the great social function.

We had a good meeting on Thursday evening. Vice-President George Powitzky presided and among other items of business it was decided to reserve date of January 26 for our annual banquet.

We were pleased to hear of activities on part of Milwaukee Branch in their preliminary plans for next convention.

Our new "question reply card" started very nicely and we hope our out-of-town members will all take advantage of it, for our librarian, F. Horath, likes lots of work. He will arrange and report on cards.

Newark Branch

The Newark Branch, A. E. S., held its regular meeting on Friday evening, there being 21 members and five visitors present.

Communication from Supreme Officers was read, in which they extend their greetings and ask for co-operation of members in making this a banner year for the A. E. S.

Our librarian, Mr. E. W. F Faint, gave a very interesting talk on copper in nickel solutions, exhibiting samples where nickel-plated part was hung on cathode rod at night and the next morning a coat of copper appeared on same. This was a new solution and the work being copper plated was first to ever enter this solution, proving the majority if not all nickel salts contain a certain amount of copper.

At the next meeting of Newark Branch, Dr. Colby will give address on toxicology.

Boston Branch

Boston Branch held a special meeting Thursday, the 11th, at the American House, with President Niham in the chair.

The chairman of the committee on research stated that so far the three cases under treatment were getting along very good and that so far he had only heard from three members of other branches who sent letters telling of the cases that they had seen or had tried to cure, and giving the treatment that had been used.

The chairman makes his appeal to every member who may know of any man in the business that may be affected in any way with the itch to let this committee know his name and we feel sure that he will be doing a favor not only to the man but to himself to know that he has helped his friend to feel right and be able to do a day's work without going to bed with his hands in cold water to relieve the pain, and this is a fact.

So let the committee know of any one that is affected in any way and this committee will try and help him so that he will not be in pain and will be able to take care of himself.

Boston Branch met Friday, the 21st, at the American House, at 8 P. M., with President Nihan in the chair.

After the regular order of business the reports of committees were

made, the branch not having met since the convention the delegates reported and they told of the business transacted and of the good work done by the committee, and the good time they had while attending the convention. A vote of thanks was extended to the delegates.

Th next report was that of the research committee on the nickel itch. The committee has had seven cases so far, and all but two failed to respond at first, but after changing the treatment they are now well along. This committee is being assisted by one of the best specialists in the city of Boston, Prof. Austin W. Cheever, who is giving his time to those who may be troubled with the nickel itch. This branch hopes that every member in the A. E. S. will take the time to find out what members have the itch and report it to the commitee by writing to the chairman, Rerrick, or to the Secretary of Boston Branch, who will be only too glad to help them to become better by following the directions sent to him. So let this branch know of any plater or helper who is affected with the itch.

Cincinnati Branch

The Cincinnati Branch meeting was well attended at first meeting in October. After regular business was attended to a general discussion on bright nickel deposit followed.

The following formula was suggested:

Twelve ozs. single nickel salts; 2 ozs. nickel chloride; 2 ozs. ammonium chloride; 2 ozs. boric acid; 2 grs. cadmium sulphate; 1 gal. water.

Question 1—Why not use cadmium chloride instead of sulphate?

Question 2—Why not use 16 ozs. of nickel sulphate and 4 ozs. of ammonium chloride instead of nickel chloride?

Mr. William Hussing stated that his experience with bright nickel solutions, if you want to polish your nickel after plating on heavy work or you wish to have a general nickel plate and then at times there is work that requires a bright nickel, it is best to add your cadmium sulphate in the small dose and use the anode to sustain them while plating bright, but to rely solely on your anodes you are apt to get too much cadmium and your nickel will be rather hard and brittle, so you see I run a batch of the cheapest kind of work in bright nickel; then I use the same solution for some period for the good grade for a long time. No cadmium anode or cadmium sulphate, and it is very bright at the start, but it comes back to the standard nickel color, and so continue until we receive order for bright work, then I dissolve the cadmium sulphate in water or the nickel solution in a pitcher, and when ready I divide it along the top of solution; then take a stick and stir down in the nickel solution about one foot, so as not to bring up the bottom and wait about 15-30 minutes and go ahead and the results are similar to the brightener operation put in silver solution, only more simple. I also tried to brighten up another nickel solution composed of 16 single nickel salts, 2 boric acid, 3 monquseum sulphate, but to no avail, but after adding ammonium chloride to this solution it showed much tendency to brighten. We must bear in mind that bright nickel does not mean white nickel, as some

think, so, owing to addition of cadmium it is not true, as there is so little cadmium added it cannot be detected, but it does brighen, and we must beware of too much, as chances are it will blacken and be very brittle, same as too much bright or carbon bisulphide in the silver solution.

Hartford-Connecticut Valley Branch

A special open meeting of Hartford-Connecticut Valley Branch was held on September 24, at the Hotel Worthy, Springfield, Mass. About fifty people were present, including a number of platers from the factories in Springfield and vicinity.

President Vibberts opened the meeting and after routine business had been transacted he turned the chair over to Vic-President Kennedy, who presided during the remainder of the evening. Letters of regret were read from George B. Hogaboom, C. H. Proctor and John E. Sterling, who were unable to be present.

The following papers were read and discussed: "Polishing and Buffing Compounds," by Frank Townsend; "Varnishes and Japans," by Amos Bissell; "Selections of Cotton for Buffing Materials," by T. O'Brien, and "Some Cleaning Problems," by W. A. Grau.

It was a very successful meeting and will result in several new members for Hartford-Connecticut Valley Branch.

Bridgeport Branch

Report of Bridgeport's regular meeting of October 5, held in our laboratory, 360 John street, President Slattery presiding: After the regular order of business had been dispensed with the appointing of committee for the proposed joint banquet was in order; also for our open meeting a program of interest was laid out, and we look forward to a fine winter's entertainment and education by the speakers we are trying to secure.

We had with us as a visitor who, I believe, is going to stay in our midst, Mr. Verrelle of the Philadelphia Branch, who favored us with a few well-chosen remarks.

Philadelphia Branch

Philadelphia Branch had a good attendance at its meeting, Friday, October 5, at the U. of P. President Gehling presided.

Banquet committee reported having secured Mosebach's Cafe for Saturday, November 24, and asked that every member do his utmost to make this the best ever.

Librarian W. M. Scott read from the REVIEW the appeal for help in the battle against nickel itch, and asked for information as to its cause and treatment.

Mr. Max Metz of Newark Branch, now located in Philadelphia, was a visitor and was cordially welcomed and thanked the members for the kind greeting and promised to have something to say at the November meeting.

The question was asked, "What effect a gallon of hydrochloric acid

has in a 200 gal. acid copper bath that was put in by mistake?" The answer was that it would produce a mahogany finish. The hydrochloric acid in the solution was destroyed with shut zinc anodes.

Milwaukee Branch

Milwaukee Branch met Thursday, September 13, at T'pp's Hall, 321 Third street. President R. Goodsell presided.

We also decided to have two meetings a month for the winter—the second Thursday, business meeting, and fourth Thursday, educational meeting.

The President appointed the following members on the committee forthe 1924 convention: R. Goodsell, President; R. Steuernagel, Secretary and Treasurer; D. Witteg, F. Marx, H. Hartig, M. Blitz, A. Kienth, J. Giessman, P. Krause, P. Sheehan, G. Gehrke. Every one of the boys are willing to do their share to make the 1924 convention the best in the history of the society.

Cleveland Branch

The regular September business meeting was held at Hotel Winton September 29, with Mr. Ter Doest in the chair. The minutes of the previous meeting; also a letter from the Supreme Secretary, read and approved of. The board of managers gave a report on the application of G. H. House, which was held over till the next meeting. Mr. C. L. Smith read a paper on barrel plating, to be continued at the next meeting. No further business. The balance of the evening was spent in a lively, general discussion. Adjournment was called for at 10:45 p. m.

New York Branch

The meeting was opened by President Morningstar. As it was a holiday the attendance was small and not much business was transacted. One application for active membership was received and referred to the bord of trustees, who recommended that the regular course of procedure be followed. Mr. Max Golden was duly initiated and assumed the obligation of membership. Mr. J. A. Straub of R. H. Macy & Co.'s requested the branch or any of our members to recommend some one as a plater's assistant.

Mr. Charles H. Buchanan of Hinsdale, Mass., one of our old-timers, who has been laid up for repairs for quite a long time, paid us a visit, and I can assure you it was a "cure for sore eyes" to see "Buck" amongst us once more, and we sincerely hope to see him quite often hereafter. Mr. Buchanan gave us quite a long talk on nickel anodes, a subject upon which he is a recognized authority. He predicts that there will be a big improvement in nickel anodes in the near future, which will tend to simplify the working of nickel solutions and improve the deposits. Mr. M. E. Stewart, one of our technical chemists, spoke at length on chromium and chromium plating, showing the interest that Dr. Fink's Paper has started in the plating of the rarer metals.

Mr. Sterling submitted a sample of novelty work from France, advertised as antique gold, which had little if any gold on it. This caused

quite a discussion. The consensus of opinion being that it was probably colored in a salt water gold solution and a pigment finish put on the front.

Our librarian, Mr. Wilson, read a paper on the electro-deposition of metals on leather.

The two semi-monthly meetings of the New York Branch were held on the 14th and 28th, respectively, with all officers present. Mr. John Sterling gave an interesting report on the doings at the convention, and he was congratulated on his election to the Supreme Presidency. An interesting paper was read on jappaning, and the methods used were fully described.

Mr. Sterling described a method of plating articles by spraying with vaporized metal, the metal being vaporized by the electric arc, but the coating was coarse, the adhesion very poor. Mr. Morningstar showed some very nice samples of wood finished with pigment lacquer. A question was asked, "Which is the best way to prepare lead for green gold?" Mr. Haddow suggested using precipitated dietate of lead with caustic soda, which was easily taken up with cyanide.

Detroit Branch

Regular meeting A. E. S., Detroit Branch, held Saturday, October 6, Vice-President F. C. Eichstaedt presiding in absence of President Miller.

The first meeting for out-of-town members, while poorly attended, made up in enthusiastic discussion of plating problems

(1) What is best method for cleaning buffed brass, stamped material, for nickel plating? Two members submitted this same question. Advised to use red oil soap for soak and wyandotte metal cleaner; either dip or electric cleaner with hot rinse between; hydrochloric or hydrofluoric acid dip after cleaner.

(2) What is a real bright nickel solution without nickel buffing? Advised to use same formula as Messrs. Bockway, Eichstaedt and Ray L. Shepard are now using.

(3) What is a simple method of determining the amount of nickel deposit? Use higly nickel buffed test piece with batch of work and peel the deposit off to michrometer.

(4) What is a good acid zinc formula for barrel work? Zinc sulphate, 2½ to 3 lbs., 2½ ozs. aluminum sulphate, 2 to 3 ozs. magnesium sulphate, 2 ozs. sodium chloride, ½ oz. corn sugar, water 1 gal; one used ¼ oz. tin chloride to gal, but be careful of excess.

(5) What is a good retainer to hold shot nickel. Bakelite containers were suggested.

(6) Does amperage decrease on a moving cathode with the same solution and voltage? Case was cited with a comparison between 1 rim in a still tank and 104 rims each (with 4½ square feet surface) in a moving cathode tank, showing a difference of 80 percent. in favor of still tank. Was advised it was an electrical problem with poor contact or insufficient generator capacity.

(7) Why does nickel plate cut through easier on brass than on steel? Due to hardness of base metal.

(8) At what temperature and concentration will the anode efficiency of a nickel bath be greater than 100 per cent., anode surface being constant in all cases? This was left open to further discussion to draw out opinions of other branch members, as was the succeeding question.

(9) At what temperature and concentration will an acid copper bath have an efficiency of 100 per cent. This was also left open.

ELECTED TO MEMBERSHIP

Toronto Branch

Joseph Ellis, Active .....938 Ossington Ave., Toronto

New York Branch

Mr. George Shea, Active.....1396 Greene Ave., Brooklyn, N. Y.
Mr. Max Golden, Active .....616 Howard Ave., Brooklyn, N. Y.

Chicago Branch

F. G. Sternberg, Active.....2200 N. Kenneth Ave., Chicago

Philadelphia Branch

C. W. Kan, Active .....629 State St., York, Pa.

Toledo Branch

Williard August Schuler, Active.....612 Tecumseh St., Toledo, Ohio

Hartford-Connecticut Valley Branch

Geo. M. Smith, Active .....Modus, Conn.
Walter G. Aurand, Associate..c|o Wallace & Sons Co., Wallingford, Conn.
Wm. T. Jordan, Active.....18 Kendall St., Springfield, Mass.

APPLICATIONS

Toronto Branch

James Welsby, Active .....336 Cambria St., Stratford, Ont.
David Woodhouse, Active .....No. 1 Paisley Ave., Toronto, Ont.

New York Branch

Joseph San Pietro, Active .....226 West 28th St.
George Conley .....14 Hornblower Ave., Belleville, N. J.

Chicago Branch

J. J. Gullis, Active .....1126 E. Prairie St., Decatur, Ill.

Hartford-Connecticut Valley Branch

Wm. J. Robillard, Active.....191 Enfield St., Thompsonville, Conn.
Harold J. White, Associate.....3 Prospect Court, Hartford, Conn.

Toledo Branch

Willard August Schuler.....612 Tecumseh St., Toledo, O.

REINSTATEMENTS

Toronto Branch

Joseph Ambrose, Active.....51 Maitland St., Toronto

TRANSFERS

Joseph Ambrose, Active.....51 Maitland St., Toronto, to Detroit Branch from Toronto Branch

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SUSPENSIONS

Indianapolis Branch

Chester McDowell .....234 Helen St., Flint, Mich.

BOSTON

Regular meetings are held third Friday of each month, at 8 p. m., at the American House, Boston. Secretary, A. W. Garrett, 821 Dorchester Ave., Dorchester, Mass.

BRIDGEPORT

Meets first and third Friday of each month in its laboratory, 260 John St., Bridgeport, Conn. Secretary, David Fleming, 97 Roosevelt St., Bridgeport, Conn.

CHICAGO

Meets second Saturday of each month, at 8 p. m., at the Hardware Club of Chicago, Room 1125. Secretary, R. J. Hazucha, 5128 Warwick Ave., Chicago, Ill.

CINCINNATI

Meets on the first and third Friday in each month, Y. M. C. A. Building. Secretary, W. J. Husing, 729 McMakin Ave., Cincinnati, Ohio.

CLEVELAND

Meets last Saturday of each month at Hotel Winton. Secretary, H. S. Kneeland, 3924 Clybourne Ave., Cleveland, Ohio.

HARTFORD-CONN. VALLEY

Meets on the fourth Monday of each month at 747 Main St., Hartford, Conn. Secretary, Tennant Elwin, Newington, Conn.

DAYTON

Meets first Saturday of each month at the Y. M. C. A., Dayton, Ohio. Secretary, Wm. Hohman, 123 N. Webster St., Dayton, Ohio.

DETROIT

Meets first Friday of each month at the Old Colony Club, 2nd floor, Hotel Tuller. Secretary, E. W. Woodmansee, 1427 Lee Place, Detroit, Mich.

GRAND RAPIDS

Meets on the second Wednesday of each month at the Vocational High School, 129 Bostwick Ave., N.E. Secretary, Chas. S. Whalley, 931 Pine Ave., N.W., Grand Rapids, Mich.

INDIANAPOLIS

Meets the second Saturday of each month at Hotel Denison. Secretary, Louis Mertz, 1725 Union St., Indianapolis, Ind.

MILWAUKEE

Meets second and fourth Thursdays of each month at Lipps Hall, 321 3d St. Secretary, R. Steuernagel, 1508 Concordia Ave., Milwaukee, Wis.

MONTREAL

Meets every Friday at 84 Craig St. West. Secretary, John H. Feelay, 411 Aylmer St., Quebec, Canada.

NEWARK

Meets first and third Fridays of each month at No. 17 Central Ave., Newark, N. J. at 8 p. m. Secretary, George Reuter, 30 Maple Ave., Irvington, N. J.

NEW YORK

Meets second and fourth Fridays of each month at the Broadway Central Hotel Parlors, New York City. Secretary, John E. Sterling, 468 Grand Ave., Long Island City, N. Y.

PHILADELPHIA

Meets first Friday of each month in the Harrison Laboratory Building, University of Pennsylvania, 34th and Spruce Sts. Secretary, P. Uhl, 2432 North 29th St., Philadelphia, Pa.

PITTSBURGH

Meets first Saturday of each month at 8 p. m., at United States Bureau of Mines Bldg., Forbes St. Secretary, S. E. Hedden, 227 Fifth St., Aspinwall, Pa.

PROVIDENCE-ATTLEBORO

Meets first and third Thursday of each month at 26 Custom House St., Room 16. Secretary, Robert Crook, 185 County St., Attleboro, Mass.

READING

Meets on the second Tuesday of each month. Secretary, William M. Fisher, 654 Gordon St., Reading Pa.

ROCHESTER

Meets every second and fourth Saturday of each month at the Hotel Seneca. Albert H. Doering, Secretary, 49 Cutler St., Rochester, N. Y.

SYRACUSE

Secretary, M. J. Crean, 109 Court St., Syracuse, N. Y.

ST. LOUIS

Meets first Tuesday of each month at Barr Branch Library, corner Jefferson and Lafayette Sts. Secretary, H. H. Williams, 4156 Botanical Ave., St. Louis, Mo.

TOLEDA

Meets first Thursday of each month at Toledo University Science Building, Electro-Platers' Room, corner Cherry and Page Sts. Secretary, W. W. Weiker, 411 3d St., Toledo, Ohio.

TORONTO

Meets fourth Monday of each month at Canadian Foresters' Hall, 22 College St., Room No. 2. Walter L. Barrows, 628 Dover Court Road, Toronto, Ontario, Canada.

WATERBURY

Meets every second and fourth Friday of each month. Secretary, Wm. F. Guilford, 230 Cooks St., Waterbury, Conn.